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[Claim(s)]

[Claim 1] Two or more signal wires arranged by crossing mutually and two or more scanning lines, and the liquid-crystal-display part equipped with the scanning line driver circuit for a scan to the signal wire driver circuit and said each scanning line for display data writing to each [these] signal wire, It has the luminescence field classified into N pieces to the perpendicular scanning direction, and the lighting control circuit of this luminescence field. These lighting control circuit is a liquid crystal display characterized by providing the backlight which synchronizes with the perpendicular synchronized signal of said liquid-crystal-display part, is made to turn on and switch off N luminescence fields one by one, and illuminates said liquid-crystal-display part.

[Claim 2] It is the perpendicular period T1 about the perpendicular scanning period which does not contain the perpendicular blanking period of a liquid-crystal-display part. It carries out and is this perpendicular period T1. In the relation to which classified into N scanning periods and the order of the scan of this N scanning period was made to correspond with the order of arrangement of N luminescence fields The liquid crystal display according to claim 1 characterized by making the luminescence field arranged by the next step during T1 / N period from the time of the scan of the scanning period corresponding to the luminescence field of self being started emit light.

[Claim 3] It is the perpendicular period T2 about the period which added the perpendicular blanking period to the perpendicular scanning period of the liquid-crystal-display part. It carries out and is this perpendicular period T2. In the relation to which classified into N scanning periods and the order of the scan of this N scanning period was made to correspond with the order of arrangement of N luminescence fields The liquid crystal display according to claim 1 characterized by making the luminescence field arranged by the next step during T2 / N period from the time of the scan of the scanning period corresponding to the luminescence field of self

being started emit light.

[Claim 4] It is the perpendicular period T2 about the period which added the perpendicular blanking period to the perpendicular scanning period of the liquid-crystal-display part. It carries out and is this perpendicular period T2. In the relation to which classified into N scanning periods and the order of the scan of this N scanning period was made to correspond with the order of arrangement of N luminescence fields The liquid crystal display according to claim 1 characterized by making the luminescence field of self emit light during T2 / N period mostly from the time of the scan of the scanning period corresponding to the luminescence field arranged by the preceding paragraph of the luminescence field of self carrying out half progress.

[Claim 5] It is the perpendicular period T2 about the period which added the perpendicular blanking period to the perpendicular scanning period of the liquid-crystal-display part. It carries out and is this perpendicular period T2. In the relation to which classified into N scanning periods and the order of the scan of this N scanning period was made to correspond with the order of arrangement of N luminescence fields The liquid crystal display according to claim 1 characterized by making the luminescence field arranged by the next step during T2 / 2N period from the time of the scan of the scanning period corresponding to the luminescence field of self carrying out half progress emit light.

[Claim 6] It is the perpendicular period T2 about the period which added the perpendicular blanking period to the perpendicular scanning period of the liquid-crystal-display part. It carries out and is this perpendicular period T2. In the relation to which classified into N scanning periods and the order of the scan of this N scanning period was made to correspond with the order of arrangement of N luminescence fields The liquid crystal display according to claim 1 characterized by making the luminescence field of the next step emit light during 2T2 / N period from the time of the scan of the scanning period corresponding to the luminescence field of self being started.

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention has backlight and relates to the suitable liquid crystal display for animation display.

[0002]

[Description of the Prior Art] An animation copies out on flat panel display devices, such as various monitors and a personal computer, with TV broadcast, DVD, etc. conventionally. And as this kind of a flat panel display device, a liquid crystal display has a small light weight, and is

used widely.

[0003] However, if an animation is copied to the conventional liquid crystal display, sufficient response will not be obtained on the characteristic of a liquid crystal, but it will become the blurred display with tail influence. As a means to solve such a problem, research and development in an antiferroelectric nature liquid crystal, the liquid-crystal-display element, for example, the ferroelectricity liquid crystal, of a new principle of operation, is done. moreover, compared with the conventional liquid-crystal-display element, this kind of new liquid-crystal-display element must boil a liquid crystal layer markedly, and must make it thinly, and control of the gap has become that glass should stretch with the manufacturing problem.

[0004] Moreover, although a plasma display, a cathode-ray tube (CRT), etc. are out of a liquid-crystal-display element, as for these, power consumption is also large to the top where form is large.

[0005]

[Problem to be solved by the invention] Thus, in the conventional liquid crystal display, sufficient response is not obtained on the characteristic of a liquid crystal, and the liquid-crystal-display element of a new principle of operation has the manufacturing problem, and it has the problem that equipment other than a liquid crystal has form and still larger power consumption.

[0006] This invention aims at offering the liquid crystal display which was made in view of the above-mentioned problem, and does not serve as a blurred display with tail influence even if it raises the response of liquid crystal display and displays an animation, without changing the conventional structure a lot.

[0007]

[Means for solving problem] Two or more signal wires arranged by this invention crossing mutually and two or more scanning lines, and the liquid-crystal-display part equipped with the scanning line driver circuit for a scan to the signal wire driver circuit and said each scanning line for display data writing to each [these] signal wire, Having the luminescence field classified into N pieces to the perpendicular scanning direction, and the lighting control circuit of this luminescence field, these lighting control circuit possesses the backlight which synchronizes with the perpendicular synchronized signal of said liquid-crystal-display part, is made to turn on and switch off N luminescence fields one by one, and illuminates said liquid-crystal-display part.

[0008] Moreover, it is the perpendicular period T1 about the perpendicular scanning period which does not contain the perpendicular blanking period of a liquid-crystal-display part. It carries out and is this perpendicular period T1. In the relation to which classified into N scanning periods and the order of the scan of this N scanning period was made to correspond with the order of arrangement of N luminescence fields The luminescence field arranged by

the next step is made to emit light during T1 / N period from the time of the scan of the scanning period corresponding to the luminescence field of self being started.

[0009] Furthermore, it is the perpendicular period T2 about the period which added the perpendicular blanking period to the perpendicular scanning period of the liquid-crystal-display part. It carries out. This perpendicular period T2 It classifies into N scanning periods and the luminescence field arranged by the next step is made to emit light during T2 / N period in the relation to which the order of the scan of this N scanning period was made to correspond with the order of arrangement of N luminescence fields from the time of the scan of the scanning period corresponding to the luminescence field of self being started.

[0010] And it is the perpendicular period T2 again about the period which added the perpendicular blanking period to the perpendicular scanning period of the liquid-crystal-display part. It carries out. This perpendicular period T2 In the relation to which classified into N scanning periods and the order of the scan of this N scanning period was made to correspond with the order of arrangement of N luminescence fields The luminescence field of self is made to emit light during T2 / N period mostly from the time of the scan of the scanning period corresponding to the luminescence field arranged by the preceding paragraph of the luminescence field of self carrying out half progress.

[0011] Furthermore, it is the perpendicular period T2 about the period which added the perpendicular blanking period to the perpendicular scanning period of the liquid-crystal-display part. It carries out. This perpendicular period T2 It classifies into N scanning periods and the luminescence field arranged by the next step is made to emit light during T2 / 2N period in the relation to which the order of the scan of this N scanning period was made to correspond with the order of arrangement of N luminescence fields from the time of the scan of the scanning period corresponding to the luminescence field of self carrying out half progress.

[0012] Moreover, it is the perpendicular period T2 about the period which added the perpendicular blanking period to the perpendicular scanning period of the liquid-crystal-display part. It carries out. This perpendicular period T2 It classifies into N scanning periods and the luminescence field of the next step is made to emit light during 2T2 / N period in the relation to which the order of the scan of this N scanning period was made to correspond with the order of arrangement of N luminescence fields from the time of the scan of the scanning period corresponding to the luminescence field of self being started.

[0013] And without changing most of the former and structure by synchronizing with the perpendicular synchronized signal of a liquid-crystal-display part, and making N luminescence fields turn on and switch off one by one, the response of liquid crystal display is raised and the tail influence at the time of animation display is lost.

[0014]

[Mode for carrying out the invention] The form of 1 operation of the liquid crystal display of this

invention is hereafter explained with reference to Drawings.

[0015] As shown in drawing 1 , a liquid crystal display is what used the thin-film transistor (Thin Film Transistor) of the dot of 640x480xRGB, for example, and is equipped with the signal input terminal 11 for inputting a picture signal and a synchronized signal.

[0016] Moreover, this liquid crystal display has the liquid-crystal-display part 12 and the backlight part 13, and the liquid-crystal-display part 12 has the signal wire 15 of the plurality by which rectangular arrangement was carried out mutually, and a 640xRGB book and plurality, and 480 scanning lines 16.

[0017] And to each signal wire 15, the signal wire driver circuit 18 for display data writing is formed. the shift register 19 in which these signal wire driver circuit 18 was formed every signal wire 15, and latch 20 -- and It has the D/A conversion circuit 21 and a shift register 19 is a timing pulse STH. Shift clock phi 1 The display data DATA is made to take into each latch 20 one by one by inputting. And when the display data DATA is stored in all the latches 20, the these-stored display data is the horizontal synchronization signal phi 2. Popularity is won and it is outputted to the D/A conversion circuit 21, and analog conversion is carried out and it is outputted to the signal wire 15 which corresponds through a buffer 22.

[0018] Moreover, to each scanning line 16, the scanning line driver circuit 23 for a scan is formed. These scanning line driver circuits 23 are the shift register 24 and the switching element 25a which were prepared every scanning line 16, and 25b. It has the switch circuit 25 which it has. Among these, a shift register 24 is the scanning timing pulse (perpendicular synchronized signal) STV. Scanning shift clock (horizontal synchronization signal) phi 2 By winning popularity, the scanning timing pulse is shifted one by one. In the switch circuit 25, it is the scanning timing pulse STV. If inputted, it is the switching element 25b. Voltage Vg2 It chooses and is the scanning timing pulse STV. When not inputted, it is the switching element 25a. Voltage Vg1 It chooses and is outputted to the corresponding scanning line 16. Namely, a scanning pulse is outputted to each scanning line 16 for every line.

[0019] furthermore, [the intersection of these signal wires 15 and a scanning line 16] The picture electrode 27 is formed through the thin-film transistor 26 for a pixel drive (Thin Film Transistor), respectively. Each picture electrode 27 has countered with the common electrode 29 through the liquid crystal layer 28, and multiple connection of the auxiliary capacity 30 is carried out to these picture electrodes 27, the liquid crystal layer 28, and the common electrode 29. In addition, as a liquid crystal layer 28, you may use a thin twist nematic (TN) liquid crystal layer, a strong dielectric liquid crystal layer, etc.

[0020] And the signal voltage outputted to the corresponding signal wire 15 is written in the pixel constituted with these picture electrodes 27, the liquid crystal layer 28, and the common electrode 29 by outputting a scanning pulse to the corresponding scanning line 16.

[0021] Moreover, the backlight part 13 is equipped with the backlight 33 which illuminates the

display surface of the liquid-crystal-display part 12, and [this backlight 33] It has the rectangular luminescence field 33-1 classified into N pieces, for example, four pieces, to the perpendicular scanning direction of the liquid-crystal-display part 12, 33-2, 33-3, and 33-4. The discharge lamp 34-1, 34-2, 34-3, and 34-4 are prepared for every [each / these / luminescence field 33-1 33-2, 33-3, and] 33-4.

[0022] The lighting control circuit 35 is formed to each [these] discharge lamp 34-1, 34-2, 34-3, and 34-4. This lighting control circuit 35 has the counter 36 for **** and a shift register 37, and the inverter 38 for a lighting drive. It is the scanning shift clock phi 2 by a counter 36. It **** and is the scanning timing pulse STV by a shift register 37. by giving the signal synchronized and ****(ed) to each inverter 38 one by one You make it turn on and switch off at a time four luminescence fields 33-1, 33-2, 33-3, the discharge lamp 34-1 prepared for every 33-4, respectively, 34-2, 34-3, and one 34-4 one by one with a predetermined cycle. Therefore, backlight 33 carries out scanning luminescence one by one for every [N luminescence fields 33-1, 33-2, 33-3, and] 33-4.

[0023] Next, lighting of each luminescence field 33-1, 33-2, 33-3, and 33-4 and putting-out-lights operation are explained with reference to the timing chart shown in drawing 2 .

[0024] First, it is the perpendicular period T1 about the perpendicular scanning period which does not contain the perpendicular blanking period of the liquid-crystal-display part 12. It carries out and is this perpendicular period T1. It has classified into four scanning periods T11, T12, T13, and T14. And the order of the scan of this four scanning period T11, T12, T13, and T14 is made to correspond with the order of arrangement of four luminescence fields 33-1, 33-2, 33-3, and 33-4.

[0025] Moreover, the liquid-crystal-display part 12 is the scanning shift clock phi 2 which it has 480 scanning lines 16 and is also a horizontal synchronization signal by the scanning line driver circuit 23. Pulse voltage is made to impress to these 480 scanning lines 16 one by one, and it scans.

[0026] Here, it is the perpendicular period T1 about the between to a perpendicular blanking period, the perpendicular scanning period which does not include the between from 481 pulses to 525 pulses, and 1 to 480 which the scan of 480 scanning lines 16 takes pulses. It carries out. and this perpendicular period T1 several [of a luminescence field] -- the period which classifies by N= 4 and scans the 121st to four scanning periods T11, the period which scans the 1st to the 120th scanning line, the scanning period T12, and the 240th scanning line -- It is considered as the scanning period T13, the period which scans the 241st to the 360th scanning line, the scanning period T14, and the period which scans the 361st to the 480th scanning line, and the order of a scan is made to correspond in order of the arrangement of four luminescence fields 33-1, 33-2, 33-3, and 33-4.

[0027] That is, the scanning period T11 of the 1st order of a scan corresponds with the

luminescence field 33-1 of the 1st order of arrangement, similarly, the scanning period T12 corresponds to the luminescence field 33-2, the scanning period T13 corresponds to the luminescence field 33-3, and the scanning period T14 supports the luminescence field 33-4, respectively.

[0028] In such a relation, [the scanning line driver circuit 23 and the lighting control circuit 35 of backlight 33] Scanning timing pulse STV of 16ms of cycles Synchronize and [each luminescence field 33-1, 33-2, 33-3, and 33-4] For example, if the scan of the scanning period T11 which corresponds for considering it as the luminescence field 33-1 of self is started, while scanning 120 scanning lines 16 during T1 / 4 period from the time, it is controlled by the lighting control circuit 35 so that the luminescence field 33-2 arranged by the next step emits light.

[0029] Similarly with the scanning start of the scanning period T12 corresponding to the luminescence field 33-2 [the luminescence field 33-3 of the next step] The luminescence field 33-1 of the next step is controlled by the lighting control circuit 35 with the scanning start of the scanning period T14 further corresponding to the luminescence field 33-4 in the luminescence field 33-4 of the next step with the scanning start of the scanning period T13 corresponding to the luminescence field 33-3 to emit light during T1 / 4 period, respectively.

[0030] These luminescence period T1 / 4 are the scanning shift clocks phi 2 by the counter 36 which constitutes the lighting control circuit 35. It is set up by ****(ing) every 120 pulses. moreover, the shift register 37 -- perpendicular synchronized signal STV making four luminescence fields turn on and switch off one by one by periodic T1 / 4 predetermined by giving the signal which synchronized and was ****(ed) every T1 / 4 period to four inverters 38 one by one -- what is called -- scanning luminescence can be carried out.

[0031] When it puts in another way, any one discharge lamp 34-1 prepared for every luminescence field, 34-2, 34-3, and 34-4 would turn on only 1 perpendicular period for 4 minutes after 3 perpendicular periods for 4 minutes from the write-in timing of the liquid-crystal-display part 12, and 3 perpendicular periods for the remaining 4 minutes will be switched off.

[0032] Thus, backlight 33 to N luminescence fields [another **** and the liquid crystal display which was made to carry out scanning luminescence one by one] The image with many motions which copied out the Television Sub-Division (TV) image, the digital videodisc (DVD) image, etc. was able to be seen clearly, without producing tail influence. Especially the flowing character of the telop was able to be displayed without not being based on the speed of the movement but dragging on. Moreover, four discharge lamps 34-1, 34-2, 34-3, and 34-4 could not be conspicuous as unevenness of a display, and the uniform display was able to be obtained.

[0033] Next, the form of the 2nd operation is explained with reference to the timing chart shown in drawing 3 .

[0034] During a perpendicular blanking period makes the discharge lamp 34-1 of the corresponding luminescence field 33-1, 33-2, 33-3, and 33-4, 34-2, 34-3, and 34-4 turn on with the form of the 2nd operation.

[0035] Here, it is the perpendicular period T2 about the perpendicular scanning period of the liquid-crystal-display part 12, and the period which added the between from a perpendicular blanking period and 481 pulses to 525 pulses to before 1 to 480 which operation of 480 scanning lines 16 takes pulses. It carries out. and this perpendicular period T2 -- several [of a luminescence field] -- the period which classifies by N= 4 and scans the 1st to four scanning periods T21 and the 131st scanning line -- The scanning period T22, the period which scans the 132nd to the 262nd scanning line, The scanning period T23, the period which scans the 263rd to the 393rd scanning line, It is considered as the scanning period T24, the period which scans the 394th to the 480th scanning line, and the period to 524 pulses which are perpendicular blanking periods, and the order of a scan is made to correspond in order of the arrangement of four luminescence fields 33-1, 33-2, 33-3, and 33-4.

[0036] That is, the scanning period T21 of the 1st order of a scan corresponds with the luminescence field 33-1 of the 1st order of arrangement, similarly, the scanning period T22 corresponds to the luminescence field 33-2, the scanning period T23 corresponds to the luminescence field 33-3, and the scanning period T24 supports the luminescence field 33-4, respectively.

[0037] In such a relation, [the scanning line driver circuit 23 and the lighting control circuit 35 of backlight 33] Scanning timing pulse STV of 16ms of cycles Synchronize and [each luminescence field 33-1, 33-2, 33-3, and 33-4] For example, if the scan of the scanning period T21 corresponding to the luminescence field 33-1 of self is started, while scanning 131 scanning lines 16 during T2 / 4 period from the time, it is controlled by the lighting control circuit 35 so that the luminescence field 33-2 arranged by the next step emits light.

[0038] Similarly with the scanning start of the scanning period T22 corresponding to the luminescence field 33-2 [the luminescence field 33-3 of the next step] The luminescence field 33-1 of the next step is controlled by the lighting control circuit 35 with the scanning start of the scanning period T24 further corresponding to the luminescence field 33-4 in the luminescence field 33-4 of the next step with the scanning start of the scanning period T23 corresponding to the luminescence field 33-3 to emit light during T2 / 4 period, respectively.

[0039] These luminescence period T2 / 4 are the scanning shift clocks phi 2 by the counter 36 which constitutes the lighting control circuit 35. It is set up by ****(ing) every 131 pulses.

[0040] When TV image, a DVD image, etc. were copied out on the liquid crystal display of such composition, the image with many motions was able to be clearly seen like the form of the 1st operation, without producing tail influence. In particular, since the discharge lamp 34-1 of the luminescence field 33-1 where a perpendicular blanking period also corresponds is made to

turn on, luminosity can be raised with the form of the 2nd operation.

[0041] Next, the form of the 3rd operation is explained with reference to the timing chart shown in drawing 4 .

[0042] One perpendicular period for about 4 minutes before and behind that, the corresponding discharge lamp 34-1, 34-2, 34-3, and 34-4 are made to turn on with the form of the 3rd operation focusing on the scanning start timing to the scanning period corresponding to the luminescence field of self.

[0043] the period which added the perpendicular blanking period to the perpendicular scanning period of the liquid-crystal-display part 12 also in this case -- perpendicular period T2 carrying out -- this perpendicular period T2 several [of a luminescence field] -- [N= 4 / classify and] It is referred to as four scanning periods T21, T22, T23, and T24, and the order of a scan is made to correspond in order of the arrangement of four luminescence fields 33-1, 33-2, 33-3, and 33-4.

[0044] That is, the scanning period T21 of the 1st order of a scan corresponds with the luminescence field 33-1 of the 1st order of arrangement, similarly, the scanning period T22 corresponds to the luminescence field 33-2, the scanning period T23 corresponds to the luminescence field 33-3, and the scanning period T24 supports the luminescence field 33-4, respectively.

[0045] In such a relation, [each luminescence field 33-1, 33-2, 33-3, and 33-4] For example, a part for 131 pulses during T2 / 4 period and the luminescence field 33-2 of self are made to emit light from the time of the scan of the scanning period T21 corresponding to the luminescence field 33-1 arranged by the preceding paragraph of the luminescence field 33-2 of self passing by a half, for example, 65 pulses.

[0046] The luminescence field 33-4 emits light during the period for 131 pulses from the time of similarly the scan of the scanning period T23 corresponding to the luminescence field 33-3 in the luminescence field 33-3 carrying out half progress during the period for 131 pulses from the time of the scan of the scanning period T22 corresponding to the luminescence field 33-2 carrying out half progress. Furthermore, it is controlled by the lighting control circuit 35 so that the luminescence field 33-1 emits light during the period for 132 pulses from the time of the scan of the scanning period T24 corresponding to the luminescence field 33-4 carrying out half progress.

[0047] Namely, focusing on the scanning start timing to the scanning period T22 corresponding to the luminescence field 33-2 of self if it puts in another way Only a part for 131 pulses which are 1 perpendicular period for about 4 minutes before and behind that, and the luminescence field 33-1 make the corresponding discharge lamp 34-1, 34-2, 34-3, and 34-4 turn on during the period for 132 pulses.

[0048] Also by such composition, when TV image, a DVD image, etc. were copied out, the

image with many motions was able to be seen clearly, without producing tail influence.

[0049] Next, the form of the 4th operation is explained with reference to the timing chart shown in drawing 5 .

[0050] the discharge lamp 34-1 prepared in each luminescence field 33-1, 33-2, 33-3, and 33-4 with the form of the 4th operation, 34-2, 34-3, and 34-4 -- 1 perpendicular period for 8 minutes -- the light is made to switch on one by one

[0051] the period which added the perpendicular blanking period to the perpendicular scanning period of the liquid-crystal-display part 12 also in this case -- perpendicular period T2 carrying out -- this perpendicular period T2 several [of a luminescence field] -- [N= 4 / classify and] It is referred to as four scanning periods T21, T22, T23, and T24, and the order of a scan is made to correspond in order of the arrangement of four luminescence fields 33-1, 33-2, 33-3, and 33-4.

[0052] In such a relation, [each luminescence field 33-1, 33-2, 33-3, and 33-4] The scan of the scanning period T21 corresponding to the luminescence field 33-1 of self For example, a half, In between for 66 from the 66th scanning line which are 1 perpendicular period for 8 minutes, and T2 / 2N period to [from the time of having passed since the 1st scanning line by 65 pulses which are the 65th scan] the 131st pulses, it is controlled by the lighting control circuit 35 so that the luminescence field 33-2 arranged by the next step emits light.

[0053] [similarly / time / of the scan of the scanning period T22 corresponding to the luminescence field 33-2 carrying out half progress / the luminescence field 33-3 of the next step] [time / of the scan of the scanning period T23 corresponding to the luminescence field 33-3 carrying out half progress / the luminescence field 33-4 of the next step] Furthermore, it is controlled by the lighting control circuit 35 so that the luminescence field 33-1 of the next step emits light by 66 pulses which are 1 perpendicular period for 8 minutes, respectively from the time of the scan of the scanning period T24 corresponding to the luminescence field 33-4 carrying out half progress.

[0054] When TV image, a DVD image, etc. were copied out also in this case, the image with many motions was able to be seen clearly, without producing tail influence. Moreover, since the lighting time per one of the discharge lamp 34-1, 34-2, 34-3, and 34-4 was short, luminosity fell, but the outline of the part and an animation became clearer.

[0055] Next, the form of the 5th operation is explained with reference to the timing chart shown in drawing 6 .

[0056] the discharge lamp 34-1 prepared in each luminescence field 33-1, 33-2, 33-3, and 33-4 with the form of the 5th operation, 34-2, 34-3, and 34-4 -- 1 perpendicular period for about 2 minutes -- the light is made to switch on one by one

[0057] the period which added the perpendicular blanking period to the perpendicular scanning period of the liquid-crystal-display part 12 also in this case -- perpendicular period T2 carrying

out -- this perpendicular period T2 several [of a luminescence field] -- [N= 4 / classify and] It is referred to as four scanning periods T21, T22, T23, and T24, and the order of a scan is made to correspond in order of the arrangement of four luminescence fields 33-1, 33-2, 33-3, and 33-4.

[0058] In such a relation, [each luminescence field 33-1, 33-2, 33-3, and 33-4] For example, if the scan of the scanning period T21 corresponding to the luminescence field 33-1 of self is started In between for 262 pulses [scan / from the 1st 2T2 / N period which is 1 perpendicular period for 2 minutes, for example, a scanning line, to / from the point in time / the 262nd], it is controlled by the lighting control circuit 35 so that the luminescence field 33-2 arranged by the next step emits light.

[0059] Similarly with the scanning start of the scanning period T22 corresponding to the luminescence field 33-2 [the luminescence field 33-3 of the next step] With the scanning start of the scanning period T23 corresponding to the luminescence field 33-3, [the luminescence field 33-4 of the next step] Furthermore, with the scanning start of the scanning period T24 corresponding to the luminescence field 33-4, the luminescence field 33-1 of the next step is controlled by the lighting control circuit 35 so that only a part for 262 pulses which are 1 perpendicular period for 2 minutes, respectively, and the luminescence field 33-1 emit light during the period for 263 pulses.

[0060] When TV image, a DVD image, etc. were copied out also in this case, the image with many motions was able to be seen clearly, without producing tail influence. Moreover, since lighting time per one of the discharge lamp 34-1, 34-2, 34-3, and 34-4 was made into 1 perpendicular period for 2 minutes, some outlines of the animation faded, but luminosity improved sharply.

[0061] In addition, the place which the scanning luminescence control facility was removed [place] from the lighting control circuit 35 of the backlight part 13 shown by drawing 1 as a comparative example, and carried out continuation lighting of each discharge lamp 34-1, 34-2, 34-3, and 34-4 as usual, With TV image and the DVD image, tail influence was conspicuous and became the blurred picture.

[0062]

[Effect of the Invention] A good picture can be obtained without producing tail influence, even if it displays the animation since the simple and cheap means raised the response of the liquid crystal according to this invention, without changing most conventional liquid crystal structures.

[Brief Description of the Drawings]

[Drawing 1] It is the circuit diagram showing the form of 1 operation of the liquid crystal display by this invention.

[Drawing 2] It is the timing chart which shows the lighting timing of the backlight part in the form of the 1st operation same as the above.

[Drawing 3] It is the timing chart which shows the lighting timing of the backlight part in the form of the 2nd operation same as the above.

[Drawing 4] It is the timing chart which shows the lighting timing of the backlight part in the form of the 3rd operation same as the above.

[Drawing 5] It is the timing chart which shows the lighting timing of the backlight part in the form of the 4th operation same as the above.

[Drawing 6] It is the timing chart which shows the lighting timing of the backlight part in the form of the 5th operation same as the above.

[Explanations of letters or numerals]

12 Liquid-Crystal-Display Part

15 Signal Wire

16 Scanning Line

18 Signal Wire Driver Circuit

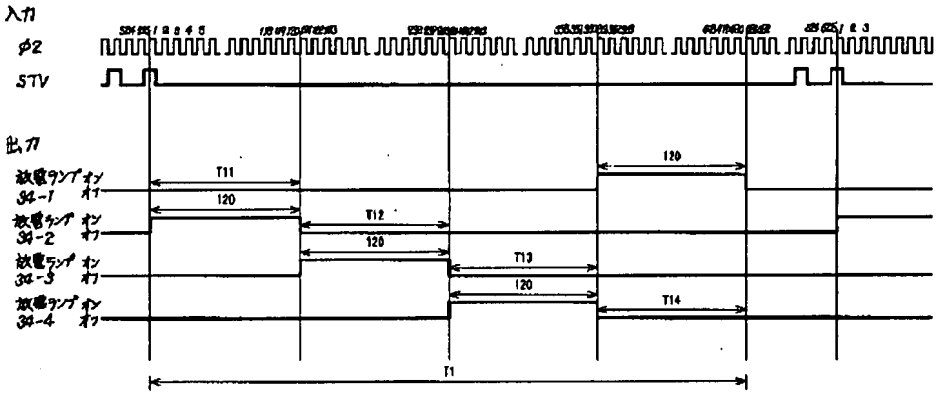
23 Scanning Line Driver Circuit

33 Backlight

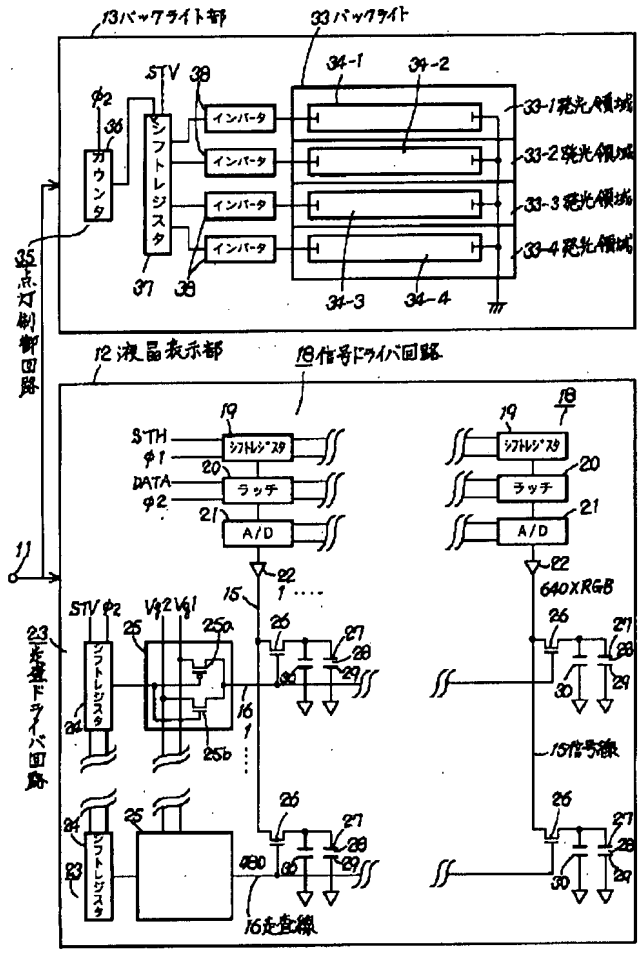
33-1, 33-2, 33-3, 33-4 Luminescence field

35 Lighting Control Circuit

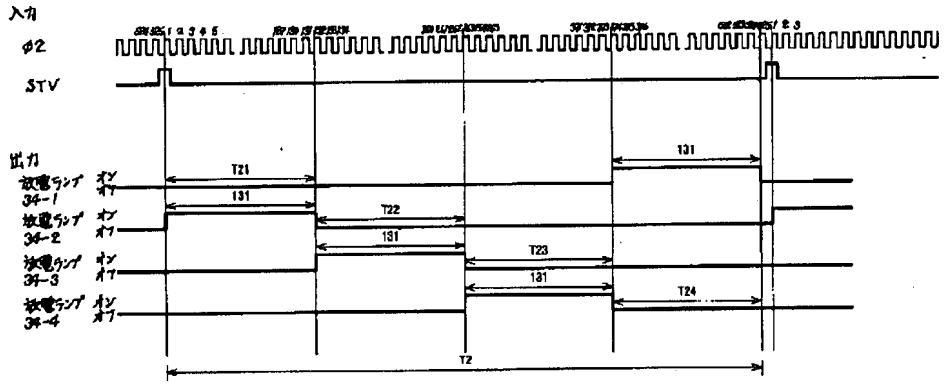
[Drawing 2]



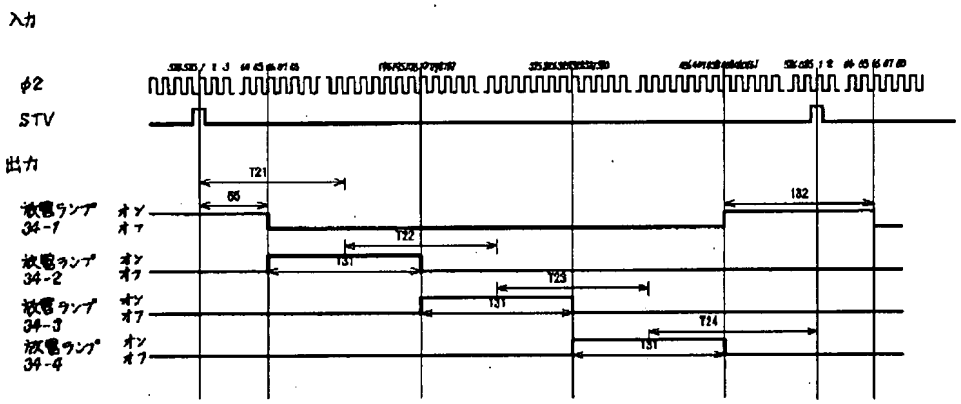
[Drawing 1]



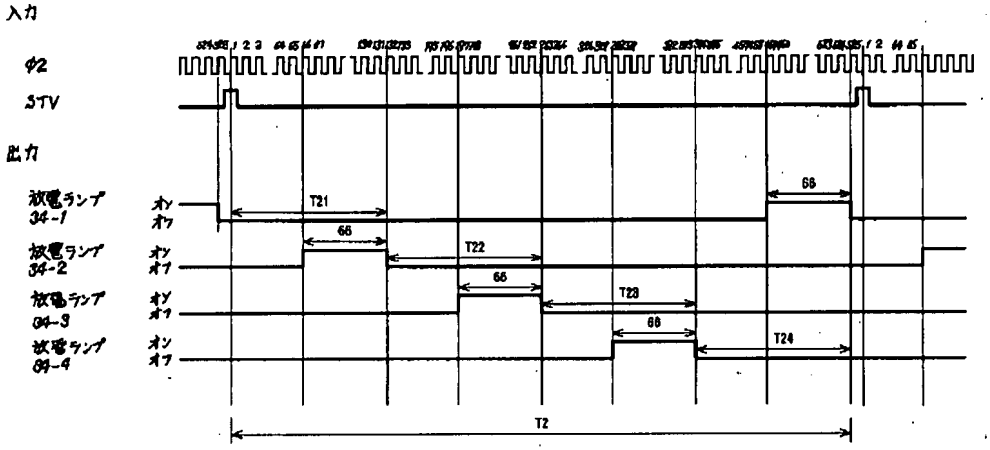
[Drawing 3]



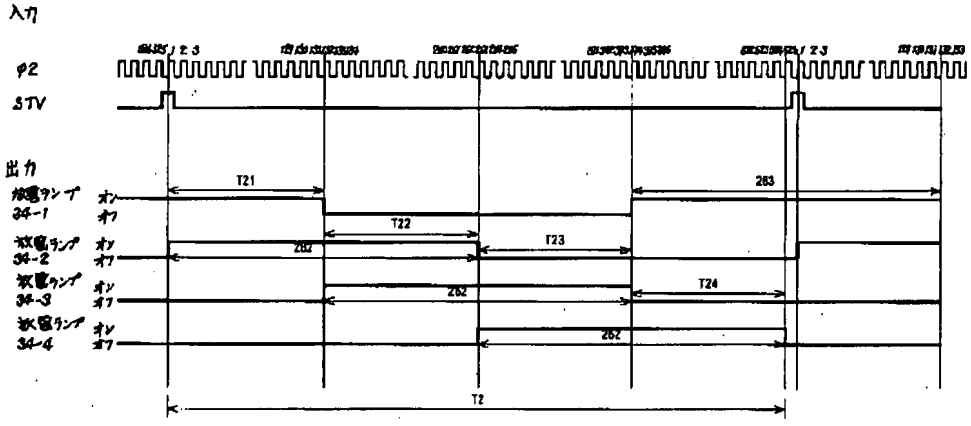
[Drawing 4]



[Drawing 5]



[Drawing 6]



[Translation done.]